

**Jennifer Seed, PhD
Branch Chief
Risk Assessment Division (7403M)
Office of Pollution Prevention & Toxics
US Environmental Protection Agency**

Work Experience

Branch Chief (Supervisory Biologist), Office of Pollution Prevention and Toxics, Risk Assessment Division (7403M), Existing Chemicals Assessment Branch, U.S. Environmental Protection Agency, 1200 Pennsylvania Ave., N.W., Washington, D.C. 20460. 4/1998-present

* Provide supervision/leadership to staff of 14 scientists with expertise in toxicology, epidemiology, biostatistics and ecotoxicology. The branch is responsible for (1) developing hazard and risk assessments for the Voluntary Children's Chemical Evaluation Program (VCCEP), perfluorooctanoic acid and other perfluorinated compounds; (2) developing toxicology profiles and IRIS summaries for the IRIS program, as well as participating in the Agency consensus review process; (3) providing scientific liaison functions with the National Toxicology Program, the Office of Research and Development, and the Center for Disease Control; (4) developing Agency science policies in support of the Risk Assessment Forum and the Science Policy Council; (5) developing test guidelines in support of the OPP/OPPT harmonization efforts, the OECD harmonization efforts, and alternatives to animal testing through ICCVAM activities; and (6) providing scientific support for the New Chemicals Assessment Branch and the High Production Volume Chemicals Branch as needed.

* Other activities include: EPA Risk Assessment Forum (chair human health effects group, 2000 - present), TERA peer consultation panel member for VCCEP (2003-present), EPA Risk Assessment Forum Steering Committee (co-chair) on harmonizing cancer and non-cancer risk assessment (2002-present), EPA SPC Genomics task force (2002-present), ORD/OPPTS Toxics/Pesticides Research Coordination Team (1998 - present), EPA Risk Assessment Forum RfD/RfC Technical Panel (2000-2003), ILSI steering committee and working group on developing a framework for mode of action analysis for noncancer endpoints (2003 - present), OECD working group for developing a technical guidance document for reproductive toxicology (1999-present), ILSI steering committee and working group on PPARa-agonist induced liver tumors in rodents and the relevance for human health risk assessment (2000-2003), ILSI steering committee and working group for behavioral developmental toxicity project (2000-2003), EPA FQPA 10x task force (1997-2002), IPSC working group for harmonization of terminology in reproductive toxicology (1999-2002), EPA endocrine standardization/validation task force (1998-2000), SOT steering committee for workshop on harmonization of risk assessment for cancer and non-cancer endpoints (1999-2000), NTP/CERHR expert panel review of 7 phthalates (1999-2000), TERA expert panel review of developmental toxicity of arsenic (1999), and EPA Risk Assessment Forum Workgroup on harmonizing cancer and non-cancer risk assessment (1998-2000).

Biologist, Office of Pollution Prevention and Toxics, Risk Assessment Division, U.S. Environmental Protection Agency, 401 M Street S.W., Washington, D.C. 20460. 2/1997-3/1998

Private Consultant - 1996 - 1997.

Senior Scientist, ILSI Risk Science Institute, 1126 16th St. N.W., Washington, D.C. 20036, 1994- 1996.

Biologist, Office of Pollution Prevention and Toxics, Health and Environmental Review Division, U.S. Environmental Protection Agency, 401 M Street S.W., Washington, D.C. 20460. 1/1989-3/1994.

Education

Ph.D. University of Washington, Seattle, WA (1987). Developmental and Cellular Biology.

B.A. University of Washington, Seattle, WA (1976). Major: Anthropology; Minor: Biology.

Contributions to EPA Publications:

US EPA 2004. Genomics Task Force White Paper. in press.

OPPTS, 2003. Proposed OPPTS Science Policy: PPAR α -Mediated Hepatocarcinogenesis in Rodents and Relevance to Human Health Risk Assessment, November 5, 2003.

OPPT, 2003. A Preliminary Risk Assessment of Developmental Toxicity Associated With Exposure to Perfluorooctanoic Acid and Its Salts, April 16, 2003.

OPPT, 2002. Draft Hazard Assessment of Perfluorooctanoic Acid and Its Salts, April 15, 2002.

US EPA 2002. A Review of the Reference Dose and Reference Concentration Processes, December, 2002, Risk Assessment Forum, Office of Research & Development, Washington, DC, EPA/630/P-02/002F.

US EPA 2002. Determination of the Appropriate FQPA Safety Factor(s) in Tolerance Assessment, February 28, 2002, Office of Pesticide Programs, Washington, DC.

US EPA 2000. Science Policy Council Handbook: Risk Characterization, December 2000. EPA 100-B-00-002.

US EPA 2000. Strategy for Research on Environmental Risks to Children. EPA/600/R-00/068.

US EPA 1999. Draft Document. "Toxicology Data Requirements For Assessing Risks of

Pesticide Exposure to Children's Health;" April 29, 1999. Report of the Toxicology Working Group of the Agency 10X Task Force. Washington, DC.

US EPA 1998. Health Effects Test Guideline 870.3800 Reproduction and Fertility Effects, EPA-712-C-98-208.

US EPA 1998. Health Effects Test Guideline 870.6300 Developmental Neurotoxicity Study, EPA -712-C-98-239.

US EPA 1998. Health Effects Test Guideline 870.3700 Prenatal Developmental Toxicity Study, EPA -712-C-98-207.

US EPA 1998. Summary of the U.S. EPA Colloquium on a Framework for Human Health Risk Assessment, Vol. 2, EPA/600/R-98/155.

US EPA 1997. Summary of the U.S. EPA Colloquium on a Framework for Human Health Risk Assessment, Vol. 1, EPA/600/R-99/001.

US EPA 1996. Guidelines for Reproductive Toxicity Risk Assessment; October 1996. EPA/630/R-96/009.

Risk Assessment Teaching Experience

Kimmel, G. Tyl, R, and J. Seed, 1998 Developmental toxicity risk assessment. Two-day course taught for Health Canada.

Kimmel, G. And J. Seed 1997. Developmental toxicity risk assessment. One-day course taught for the Mid-Atlantic Reproduction and Teraology Association.

Seed, J. 1996. Developmental Toxicity Risk Assessment. Invited speaker for American Chemical Society short course on toxicology, Clearwater, FL.

Seed, J. 1996. Developmental Toxicity Risk Assessment. Invited speaker for American Chemical Society short course on toxicology, Charleston, SC.

Seed, J. 1995. Developmental Toxicity Risk Assessment. Invited instructor for American Chemical Society short course on toxicology, Clearwater, FL.

Seed, J. 1994. Developmental Toxicity Risk Assessment. Invited instructor for American Chemical Society short course on toxicology, Clearwater, FL.

Seed, J. 1994 Developmental Toxicity Risk Assessment. Invited instructor for American Chemical Society short course on toxicology, New Orleans, LA.

Barnes, D., J. Seed and M. Pavlova. 1993. Risk assessment methodology used at the U.S. Environmental Protection Agency. Two series of 5-day courses taught in Bulgaria for environmental health officials.

Publications

Meek, M.E., J.R. Bucher, S.M. Cohen, V. Dellarco, R.N. Hill, L.D. Lehman-McKeeman, D.G. Longfellow, T. Pastoor, J. Seed and D.E. Patton 2003. A framework for human relevance analysis of information on carcinogenic modes of action. *Crit. Rev. Toxicol.* 33: 591-653.

Middaugh, L.D., D. Dow-Edwards, A. Li, J.D. Sandler J. Seed, L.P. Sheets, D.L. Shuey, W. Slikker, Jr, W.P. Weisenburger, L.D. Wise, and M.R. Selwyn. 2003. Neurobehavioral Assessment: A Survey of Use and Value in Safety Assessment Studies. *Toxicol. Sci.* 76: 250-261.

Solecki, R. et al. 2003. Harmonization of rat fetal external and visceral terminology and classification: Report of the fourth workshop on the terminology in developmental toxicology, Berlin, 18-20 April 2002. *Repro. Toxicol.* 17:625-637.

Kavlock, R., K. Boekelheide, R. Chapin, M. Cunningham, E. Faustman, P. Foster, M. Golub, R. Henderson, I. Hinberg, R. Little, J. Seed, K. Shea, S. Tobacova, R. Tyl, P. Williams and T. Zacharewski. 2002. NTP Center for the Evaluation of Risks to Human Reproduction: phthalates expert panel report on the reproductive and developmental toxicity of butyl benzyl phthalate. *Repro. Toxicol.* 16: 453-487.

Kavlock, R., K. Boekelheide, R. Chapin, M. Cunningham, E. Faustman, P. Foster, M. Golub, R. Henderson, I. Hinberg, R. Little, J. Seed, K. Shea, S. Tobacova, R. Tyl, P. Williams and T. Zacharewski. 2002. NTP Center for the Evaluation of Risks to Human Reproduction: phthalates expert panel report on the reproductive and developmental toxicity of di-n-butyl phthalate. *Repro. Toxicol.* 16: 489-527.

Kavlock, R., K. Boekelheide, R. Chapin, M. Cunningham, E. Faustman, P. Foster, M. Golub, R. Henderson, I. Hinberg, R. Little, J. Seed, K. Shea, S. Tobacova, R. Tyl, P. Williams and T. Zacharewski. 2002. NTP Center for the Evaluation of Risks to Human Reproduction: phthalates expert panel report on the reproductive and developmental toxicity of di(2-ethylhexyl) phthalate. *Repro. Toxicol.* 16: 529-653.

Kavlock, R., K. Boekelheide, R. Chapin, M. Cunningham, E. Faustman, P. Foster, M. Golub, R. Henderson, I. Hinberg, R. Little, J. Seed, K. Shea, S. Tobacova, R. Tyl, P. Williams and T. Zacharewski. 2002. NTP Center for the Evaluation of Risks to Human Reproduction: phthalates expert panel report on the reproductive and developmental toxicity of di-isodecyl phthalate. *Repro. Toxicol.* 16: 655-678.

Kavlock, R., K. Boekelheide, R. Chapin, M. Cunningham, E. Faustman, P. Foster, M. Golub, R. Henderson, I. Hinberg, R. Little, J. Seed, K. Shea, S. Tobacova, R. Tyl, P. Williams and T. Zacharewski. 2002. NTP Center for the Evaluation of Risks to Human Reproduction: phthalates expert panel report on the reproductive and developmental toxicity of di-isononyl phthalate. *Repro. Toxicol.* 16: 679-708.

Kavlock, R., K. Boekelheide, R. Chapin, M. Cunningham, E. Faustman, P. Foster, M. Golub, R. Henderson, I. Hinberg, R. Little, J. Seed, K. Shea, S. Tobacova, R. Tyl, P. Williams and T. Zacharewski. 2002. NTP Center for the Evaluation of Risks to Human Reproduction: phthalates expert panel report on the reproductive and developmental toxicity of di-n-hexyl phthalate. *Repro. Toxicol.* 16: 709-719.

Kavlock, R., K. Boekelheide, R. Chapin, M. Cunningham, E. Faustman, P. Foster, M. Golub, R. Henderson, I. Hinberg, R. Little, J. Seed, K. Shea, S. Tobacova, R. Tyl, P. Williams and T. Zacharewski. 2002. NTP Center for the Evaluation of Risks to Human Reproduction: phthalates expert panel report on the reproductive and developmental toxicity of di-n-octyl phthalate. *Repro. Toxicol.* 16: 721-734.

Solecki, R., Heinrich, B., Buschmann, J., Chahoud, I., Clark, R., Duverger, M., Fialkowski, O., Guittin, P., Hazelden, K., Hellwig, J., Hofmann, Y., Hubel, U., Khalil, S., Lingk, W., Mantovani, A., Moxon, M., Muller, S., Parkinson, M., Paul, M., Paumgarten, F., Pfeil, R., Platzek, T., Rausch-Ernst, M., Scheevelenbos, A., Seed, J., Talsness, C., Yasuda, M., and Younes, M. 2001. Harmonisation of terminology and classification in developmental toxicology: Report of the third workshop on the terminology in developmental toxicology. *Repro. Toxicol.*, 15:713-721.

Bagdanffy, M., G. Charnley, G. Daston, E. Faustman, C. Kimmel, G. Kimmel, S. Lewis, G. Lucier, J. Seed and V. Vu. 2001. Harmonization of cancer and non-cancer risk assessment: Proceedings from a multistakeholder workshop. *Toxicol. Sci.* 61: 18-31.

G.K. Lemasters, S. D. Perreault, B. F. Hales, M. Hatch, A. N. Hirshfield, C. M. Hughes, G. L. Kimmel, J. C. Lamb IV, J. L. Pryor, C. Rubin, and J. G. Seed 2000. Workshop to identify critical windows of exposure for children's health: Reproductive health in children and adolescents work group summary. *Env. Health Perspectives.*: 108 (Suppl. 3): 505-509.

Chahoud, I., J. Buschmann, R. Clark, A. Druga, H. Falke, A. Faqi, E. Hansen, B. Heinrich-Hirsch, J. Hellwig, W. Lingk, M. Parkinson, F. Paumgarten, R. Pfeil, T. Platzek, A. Scialli, J. Seed, R. Stahlmann, B. Ulbrich, X. Wu, M. Yasuda, M. Younes and R. Solecki. 1999. Classification of terms in developmental toxicology: Need for harmonization. *Repro. Toxicol.* 13: 77-82.

Daston, G., C. Kimmel, B. Astroff, S. Darney, W. Faber, T. Fico, M. Hurtt., S. Makris, R. Morrissey, D. Robinson, J. Seed, D. Shuey, M. Tassinari and L.D. Wise. 1998. An evaluation and interpretation of reproductive endpoints for human health risk assessment. *International Life*

Sciences Institute Press.

Haber, L., B. Allen, J. Seed and K. Gan 1998. Application of benchmark dose methodology to a variety of endpoints and exposures. Govt Reports Announcements & Index, Issue 11.

Seed, J et al., 1996. ILSI Risk Science Institute Pathogen Risk Assessment Working Group Consensus Report: A conceptual framework to assess the risks of human disease following exposure to waterborne pathogens. *Risk Anal*, 16: 841-848.

Seed, J., R.E. Chapin, E.D. Clegg, S.P. Darney, L. Dostal, R.H. Foote, M.E. Hurtt, G.R. Klinefelter, S. Makris, S. Schrader, D. Seyler, R. Sprando, K.A. Treinen, R. Veeramachaneni, and L.D. Wise. 1996. Methods for assessing sperm motility, morphology, and counts in the rat, rabbit, and dog: A consensus report. *Reprod. Toxicol.* 10:237-244.

Seed, J., R. Brown, S.O. Olin, and J. Foran 1995. Chemical mixtures: Current risk assessment methodologies and future directions. *Reg. Toxicol. Pharmacol.* 22: 76-94.

Seed, J. and S. Makris 1994. Proposed revisions to the testing guidelines for two-generation reproductive toxicity and developmental toxicity studies conducted under FIFRA and TSCA. *Teratology* 49:368.

Mills, K.A., Mathews, K.D., Schmalzel, R., Seed, J.G., Nadeau, J., and Murray, J.C. 1992. Human chromosome 4 homology mapping in interspecific backcrossed mice. *Am. J. Human Genet.* 51:A196.

Seed, J., Olwin, B., and Hauschka, S.D. 1988. Fibroblast growth factor levels in the whole embryo and limb bud during chick development. *Dev. Biol.* 128, 50-57.

Seed, J., and Hauschka, S.D. 1988. Clonal analysis of vertebrate myogenesis. VIII. FGF-dependent and FGF-independent muscle colony types during chick limb development. *Dev. Biol.* 128, 40-49.

Seed, J., and Hauschka, S.D. 1984. Temporal separation of the migration of distinct myogenic precursor populations into the developing chick wing. *Dev. Biol.* 106, 389-393.